

(No Model.)

3 Sheets—Sheet 1.

H. DOCK.
MARINE PROPELLER.

No. 442,614.

Patented Dec. 16, 1890.

Fig. 1.

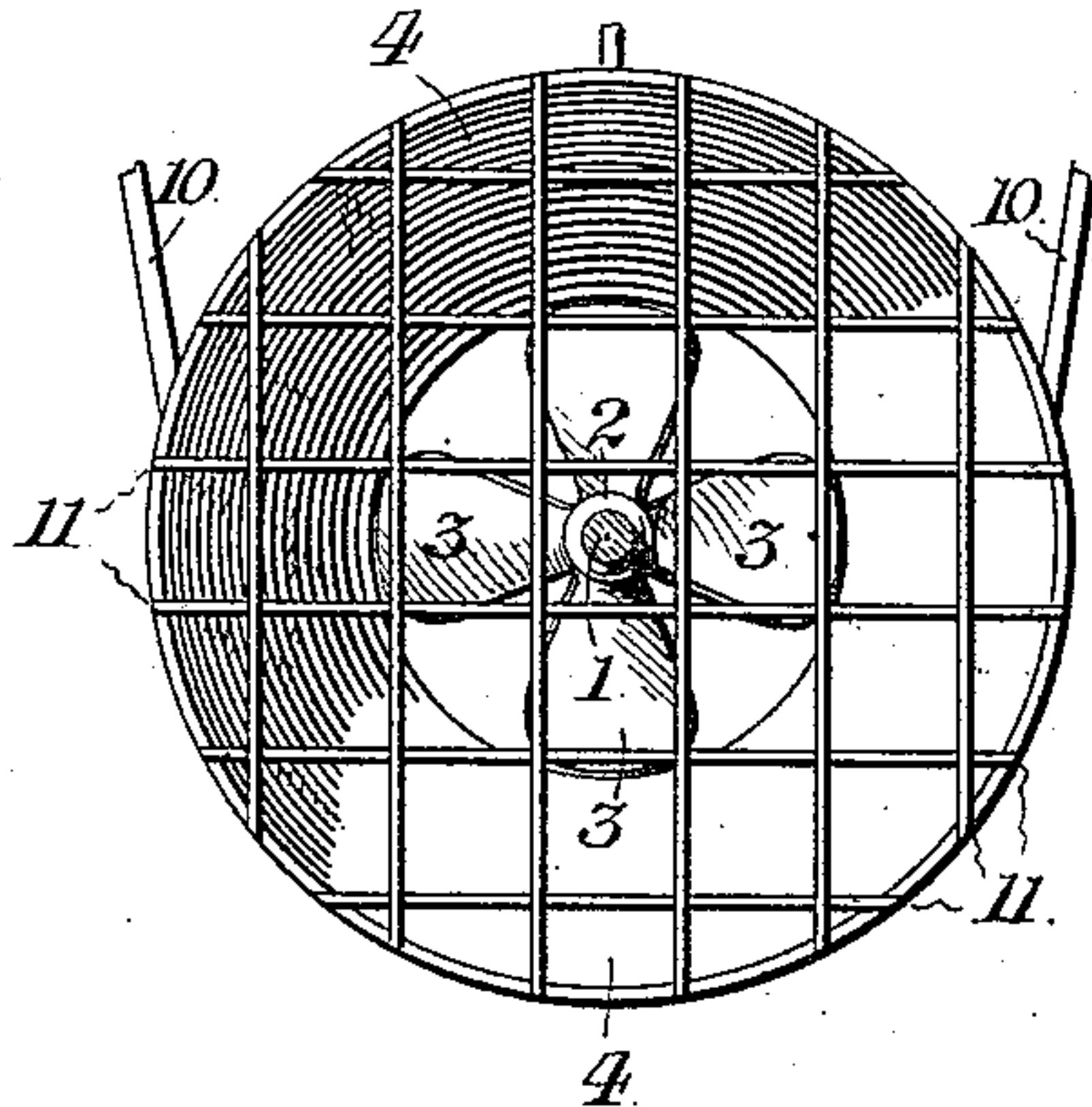


Fig. 2.

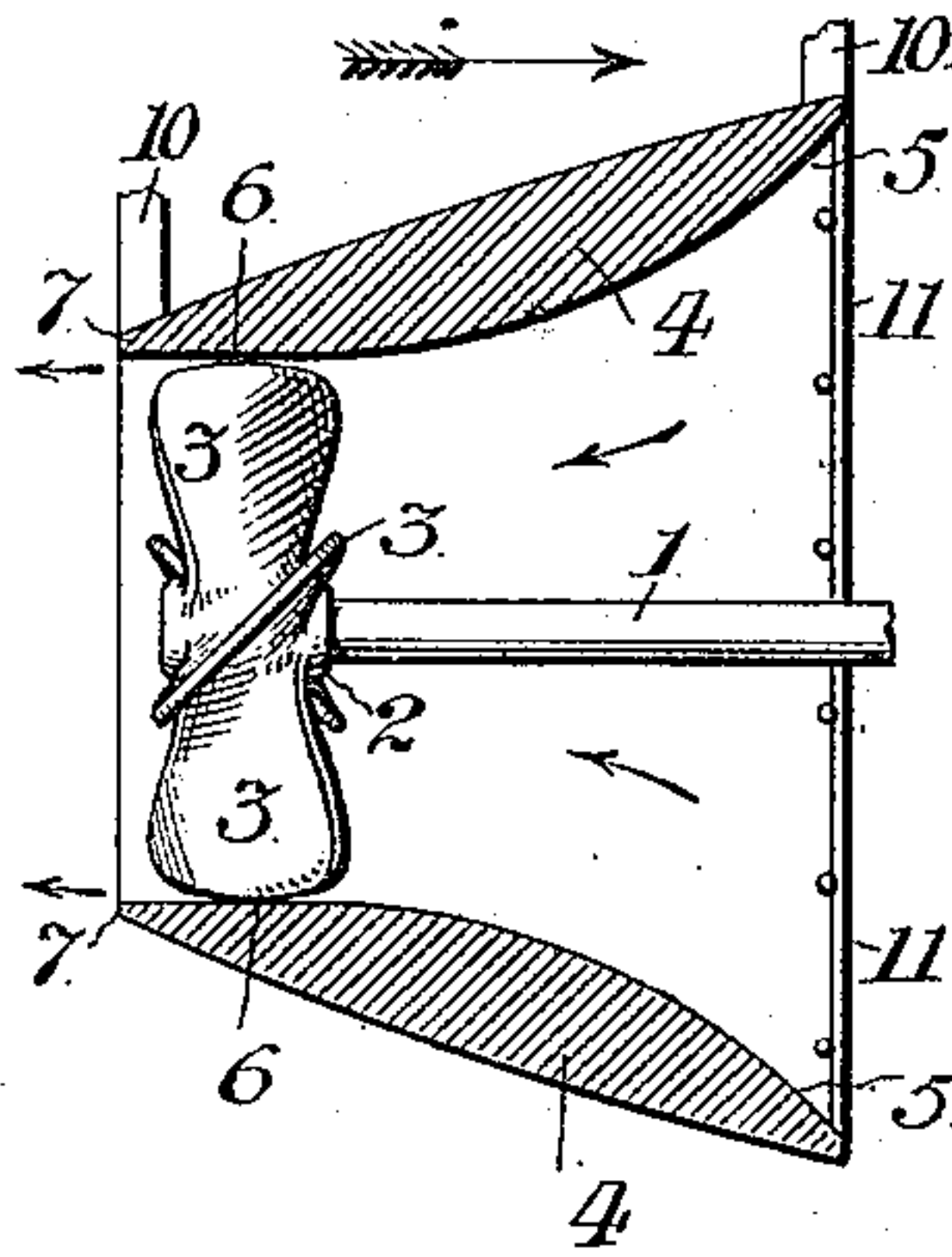


Fig. 3.

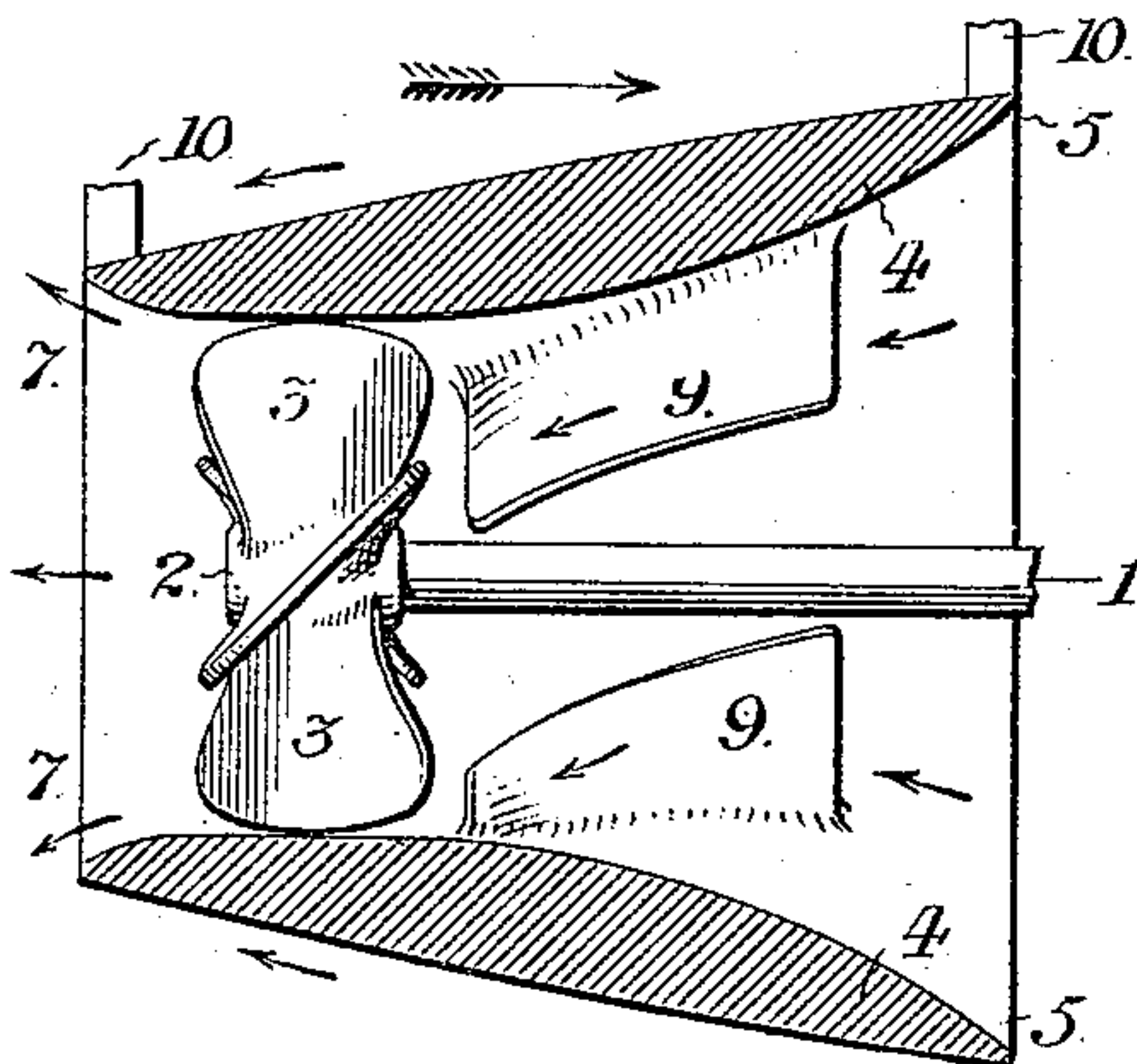
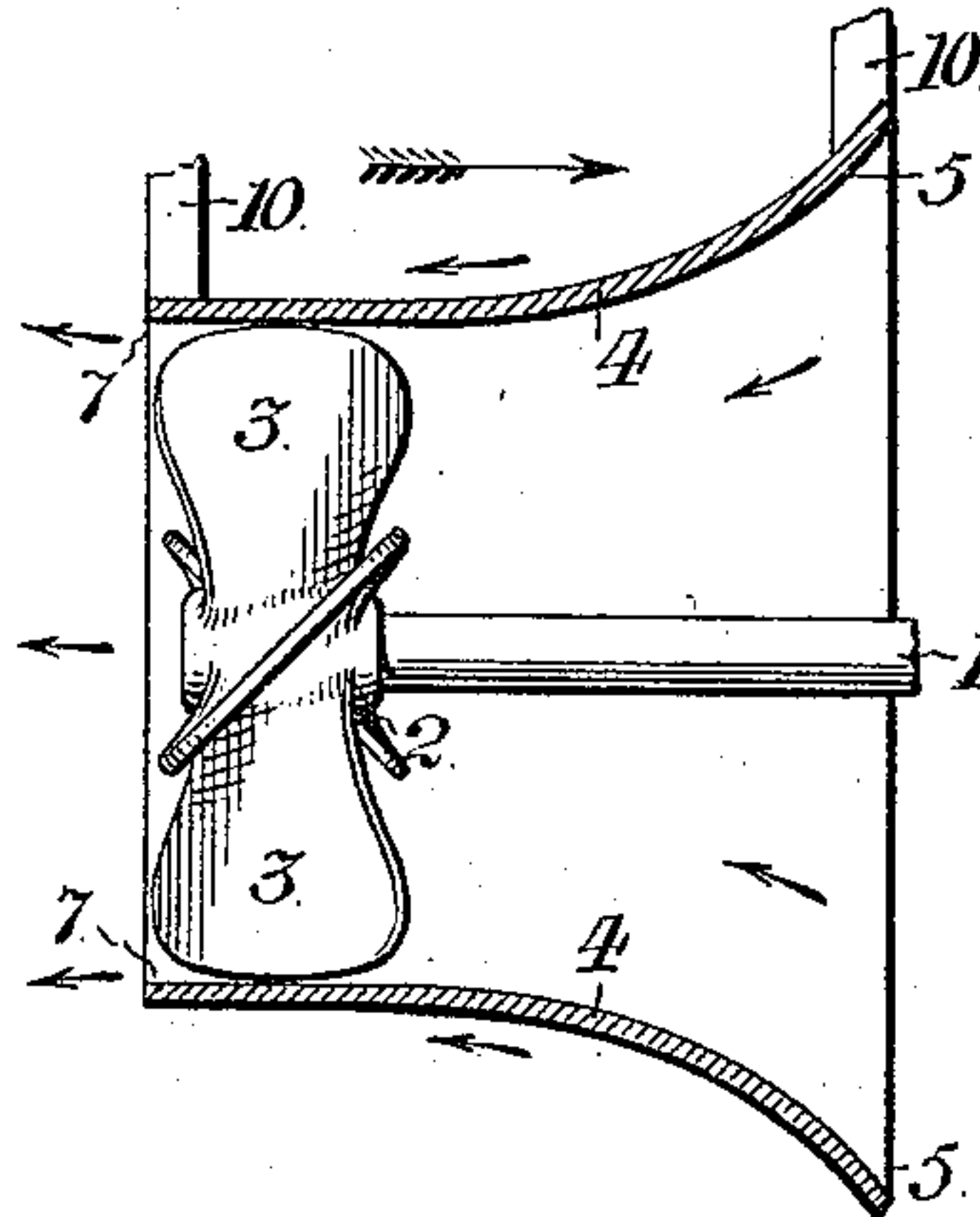


Fig. 4.



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Fig. 7.

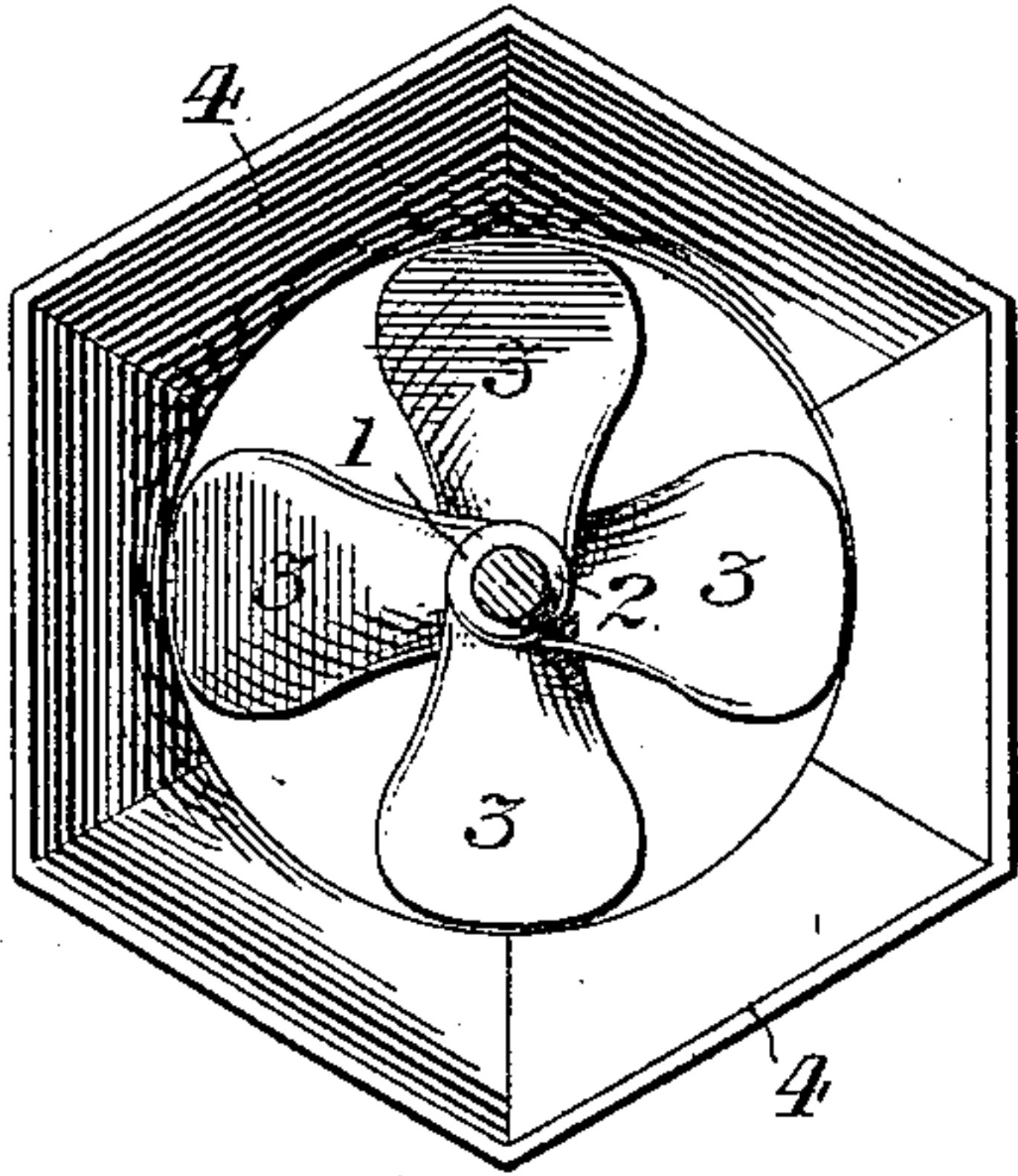


Fig. 5.

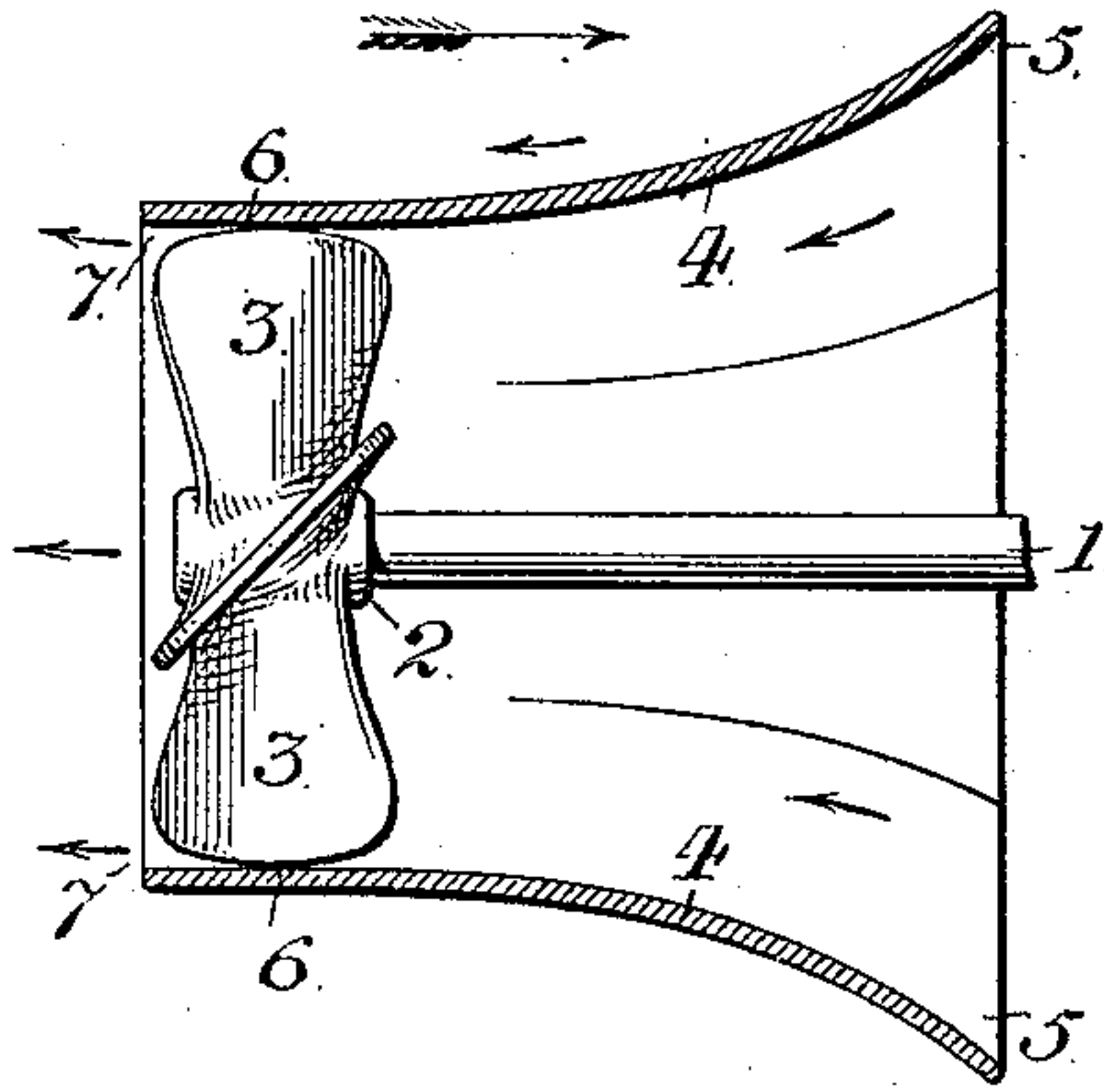


Fig. 8.

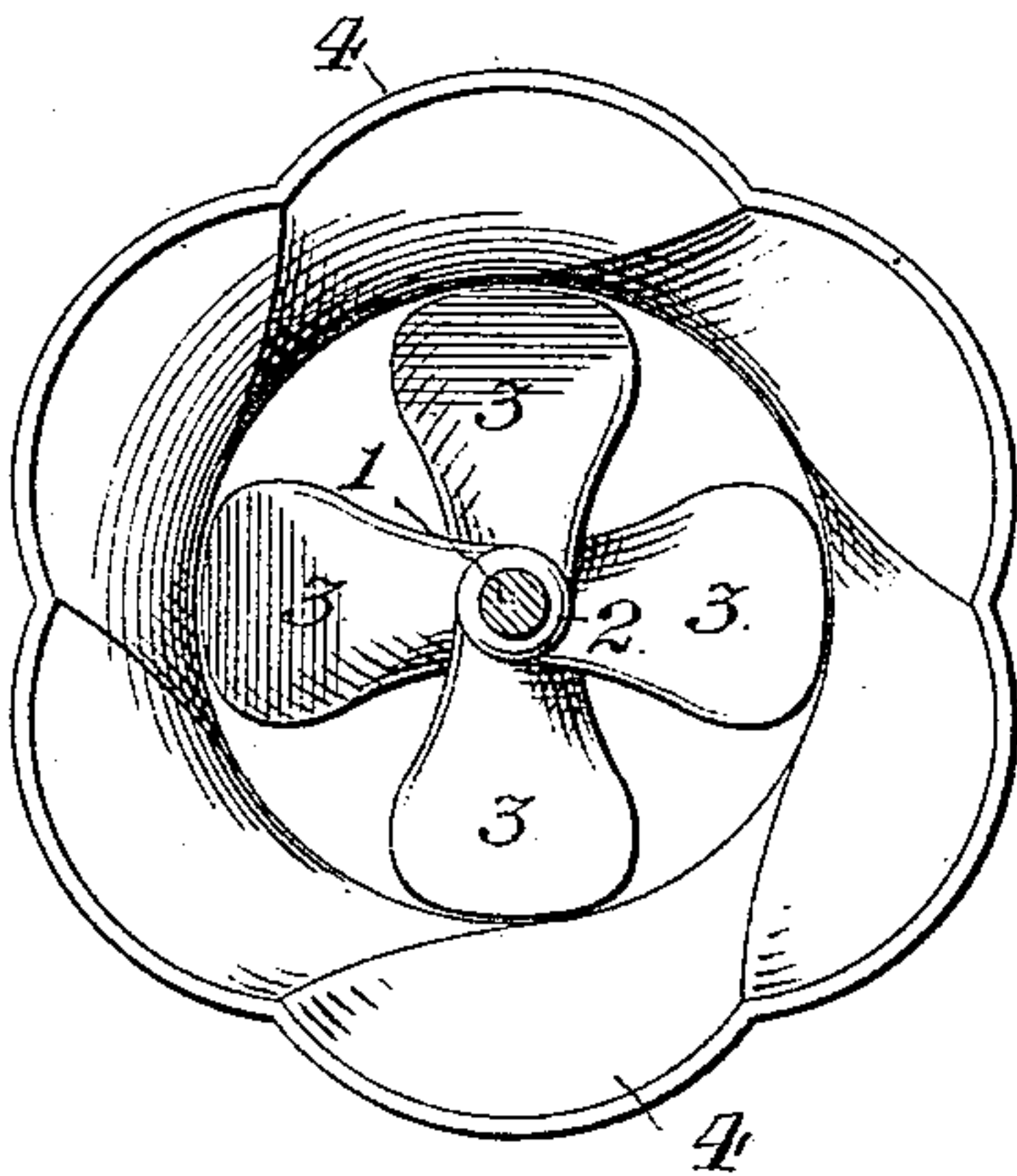
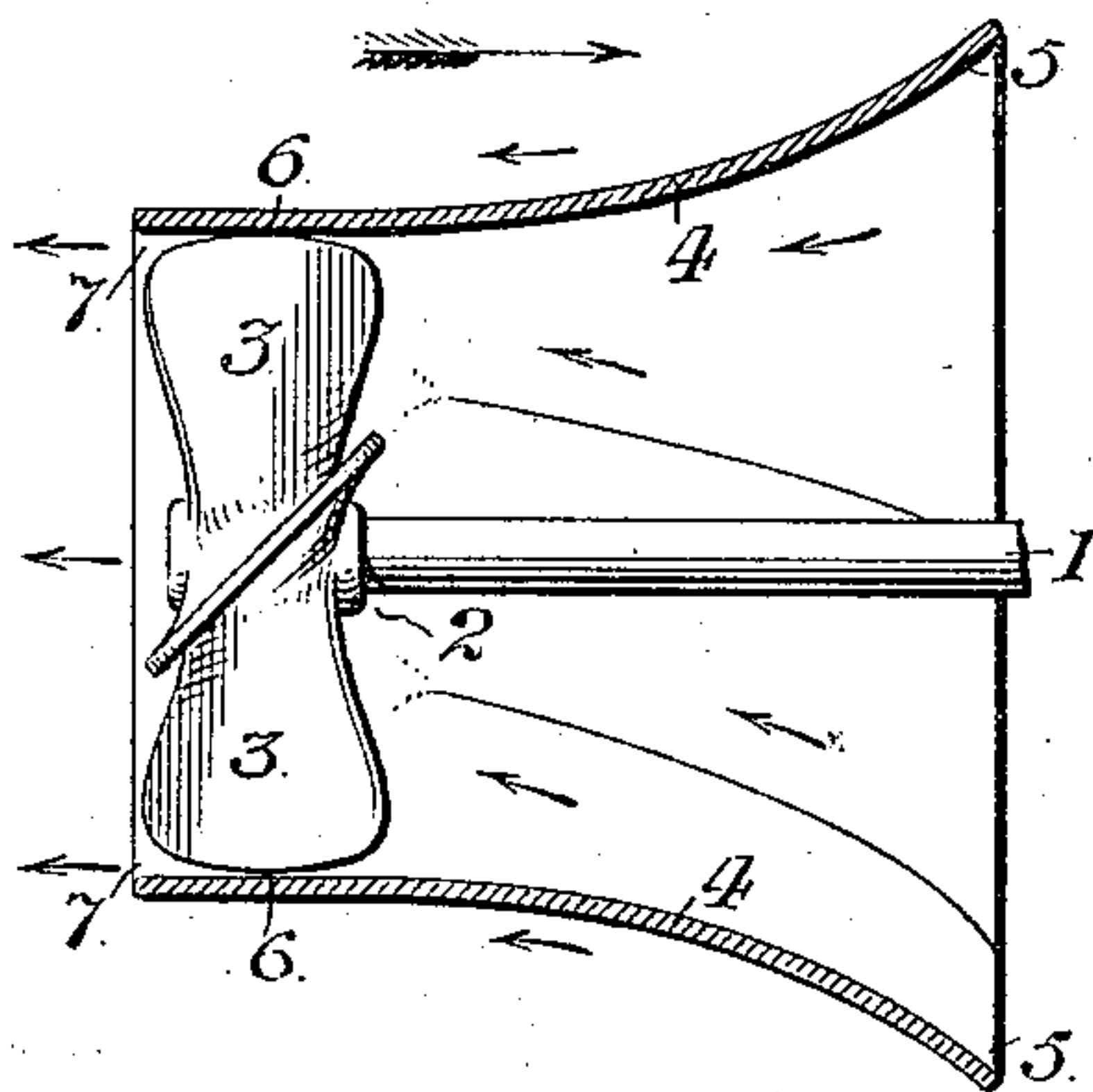


Fig. 6.



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Fig. 9.

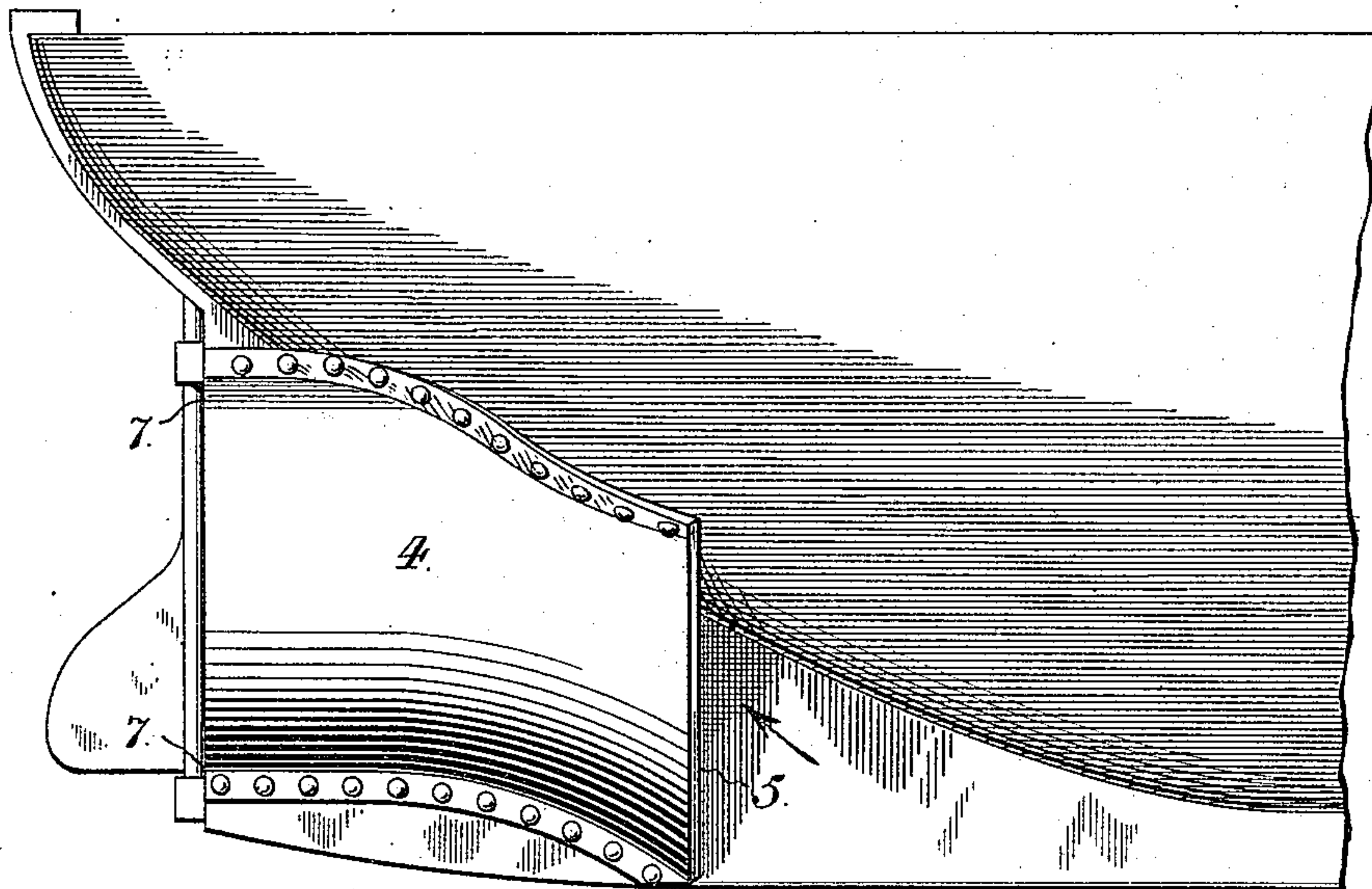
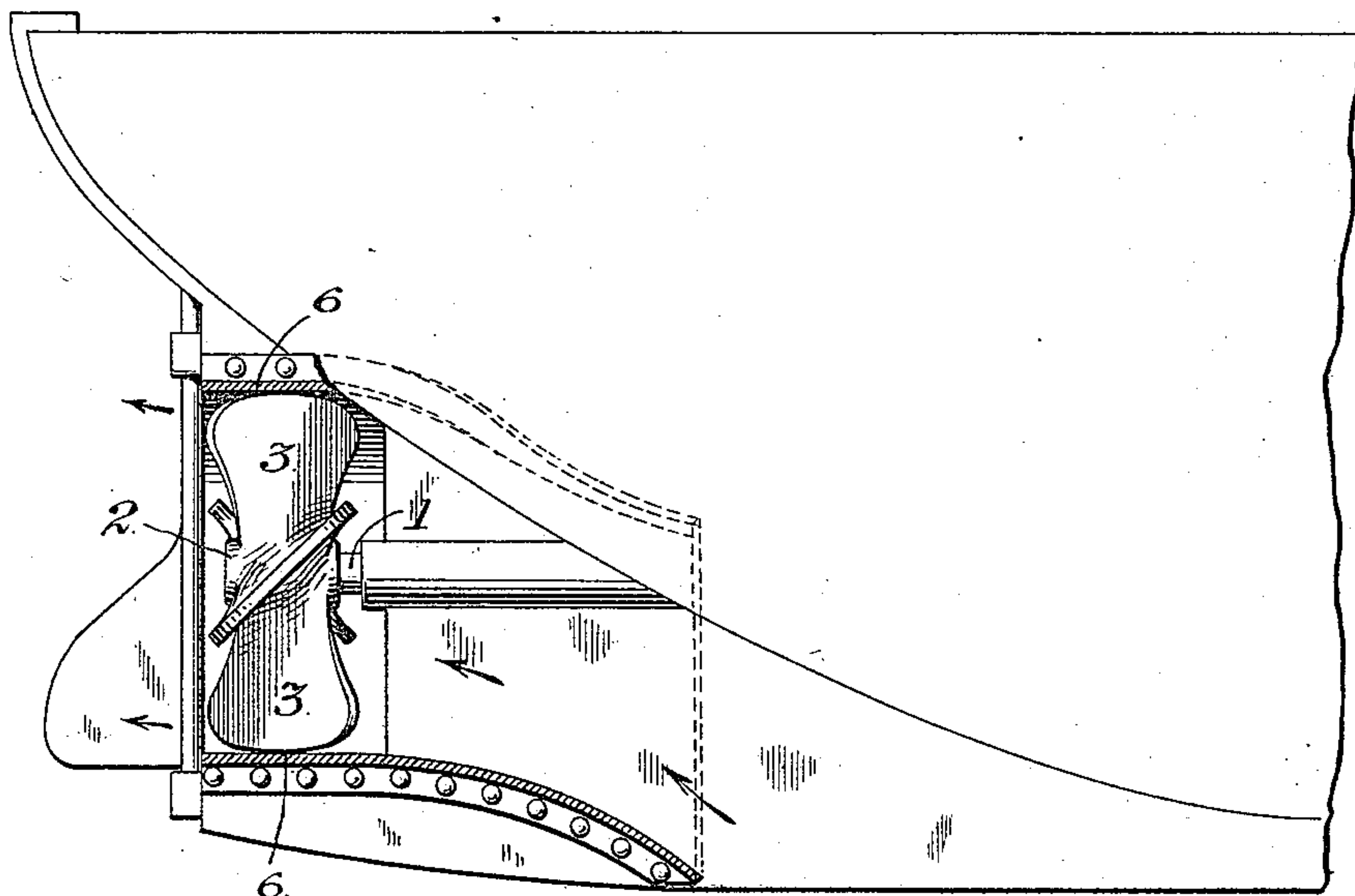


Fig. 10.



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UNITED STATES PATENT OFFICE.

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MARINE PROPELLER.

SPECIFICATION forming part of Letters Patent No. 442,614, dated December 16, 1890.

Application filed December 31, 1889. Serial No. 335,543. (No model.)

To all whom it may concern:

Be it known that I, HERMAN DOCK, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Marine Propellers; and I do hereby declare the following to be a sufficiently full, clear, and exact description thereof to enable others skilled in the art to make and use the said invention.

This invention relates to marine propulsion, and has for its object the more efficient action of screw-propellers, and may be briefly stated to consist in a guide or casing surrounding the propeller guiding the water into the propeller and confining it in such a manner that none of the force intended for propulsion is wasted in centrifugal effect, or in radially or tangentially agitating the surrounding water.

The construction of this apparatus is shown in the accompanying drawings, in which—

Figure 1 shows a front view of a screw-propeller with this invention applied thereto; Fig. 2, a central vertical section thereof; Fig. 3, a central vertical section of a modified form; Figs. 4, 5, and 6, central vertical sections of other modifications thereof; Figs. 7 and 8, forward and end views of the form shown in Figs. 5 and 6. Figs. 9 and 10 respectively show in elevation and section the application of segments of the bell-mouthed guide to a propeller as usually located in a vessel in the dead-wood forward of the rudder.

The same reference-marks indicate like parts in the several figures.

1 represents a propeller-shaft; 2, the hub of a propeller, and 3 the blades thereof. (The propeller is assumed to travel in the direction of the large arrow from left to right.)

4 is a casing surrounding the propeller, made flaring at the forward end 5, and by easy curves converging to a cylindric form of the diameter of the propeller-blades, which fit and turn in it, but without contact or friction.

The water is directed toward the propeller-blades by the guides 4, so that it passes at its highest velocity through the throat 6 of the guide, where the propeller engages it, and thus is prevented from diverging or spreading away from the propeller 3, and is delivered with the fullest effect in a solid stream from the after end 7 of the guide 4, and since the

inertia of the fluid is most effectively operative when opposed to bodies moving at highest velocities, the support afforded by the water as a nut for the screw 3 to act upon being at the place of greatest velocity, it has the least slip possible, and the propelling effect is proportionably improved.

The current of water is forced by the propeller-blades 3 through the guide 4, in the direction of the small arrows to the left of Figs. 2, 3, and 4, and induces a converging current in the direction of the arrows above and below the guide 4, instead of the wide-spread lateral agitation of the water produced astern by ordinary propellers.

In order to prevent objects or animals being drawn into and fouling the propeller, a grill or frame-work of bars 11 may be placed at the entrance to the guide or casing.

In the form shown in Fig. 3 guiding-blades 9 are placed in the forward end of the guide, directing the water torsionally to the propeller in such direction as most effectively to engage the blades 9, so as better to avoid any slip or waste of power, and the contracted tube or guide 4 has a slightly-flaring conical ajutage at the rear end of the cylindric part, which serves to support the column of water delivered through the guide and direct it to easy and forcible confluence with the surrounding water. The guide 4 is held in position by braces 10, securing it to contiguous parts of the vessel, which braces should be so beveled or shaped as to present the least resistance to progress through the water. In the form shown in Fig. 4 the external lines of the guide are concave, like a bell, and the flow of water around the guide 4 is in corresponding direction, the guide being lighter and of less bulk.

In the form of this invention illustrated in Figs. 5 and 7 the bell-mouthed inlet 5 to the casing or guide 4 is made polygonal in transverse section, and in the forms shown in Figs. 6 and 8 it is made with helical flutes in this portion. As shown in Figs. 9 and 10, instead of a complete ring or bell-shaped guide 4, leading the water to and confining it diametrically about the propeller, segments of the bell-mouthed portion are employed, so that the guidance of the water is secured upon each side of the keel and dead-wood with the

same guiding effect. In all of these forms the convergence of the guide in curved lines toward the propeller is to be observed as a feature essential to the proper working of the invention.

Having described my invention and the operation thereof, what I claim is—

1. In combination with a screw-propeller, a guide having a flaring inlet or mouth forward and contracting in curved lines and diminishing in cross-sectional area toward the propeller, substantially as shown and described.

2. In combination with a screw-propeller, a guide of cylindric form surrounding the propeller and provided with a forward bell-shaped inlet diminishing in cross-sectional area toward the propeller in curved lines, substantially as set forth.

3. In combination with a screw-propeller,

the casing surrounding the propeller provided with a forward bell-mouthed extension diminishing in cross-sectional area in curved lines toward the propeller and having an aft expanded ajutage, substantially as set forth and described.

4. In combination with a screw-propeller and a cylindric case surrounding the same, bell-mouthed segments arranged to form a conduit or conduits of diminishing areas of cross-section toward the cylindric case, to guide the water with augmented velocity into said cylindric case, substantially as set forth and described.

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Witnesses:

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